

Remarks

The Office Action dated May 25, 2004 has been carefully reviewed and the following remarks are made in consequence thereof.

Claims 1-3, 6-13, and 15-21 are pending in this application. Claims 1-4 and 6-21 stand rejected.

In regards to the statement on page 2 of the current Office Action that the response to the Final Office Action of December 3, 2004 included remarks directed to prior art not applied in the rejection of the claims in the Office Action, Applicant respectfully submits that the Final Office Action did apply the prior art addressed in Applicant's response. Particularly, the Final Office Action states that "the 35 U.S.C. 103 rejections of the Claims in sections 3, 4, and 5 of the 6/17/03 Office Action are maintained and herein incorporated. Additionally, the claims are rejected based on the applied art discussed below." Applicant submits that these incorporated rejections were traversed and that the pending claims are patentable over Nakamaru et al., Chalfant Jr., and Kobayashi, alone or in combination.

The rejection of Claims 1-3, 6-9, and 11-13, and 15-20 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Kessler et al. (Proceedings of the Fifth International Conference on Emerging Nuclear Energy Systems, Karlsruhe, 3-6 July 1989) is respectfully traversed.

Nakamaru et al. describe a boiling water reactor nuclear power plant that includes a pressure containment vessel 401 that has a dual-cylinder structure of an inner wall 401a and an outer wall 401b. The inner wall 401a forms a dry well 231 about the outer circumference of the pressure vessel 201. The outer wall 401b forms a suppression pool 404 on the outer side of the

inner wall 401a. The walls are made by a plurality of steel plates and the spaces between the opposing plates being able to convey water or air. Also, Nakamaru et al. describe in paragraph [0050] that their invention includes "a pressure containment vessel positioned in the reactor building; a drywell comprising space inside the pressure containment vessel; a pressure suppression pool provided inside the pressure containment vessel; a nuclear reactor pressure vessel contained by the pressure containment vessel . . . ." Further, Nakamaru et al. do not describe nor suggest that the containment vessel has a pressure rating of at least about 50 atmospheres nor that the containment vessel has a volume less than four times the volume of the reactor pressure vessel.

Kessler et al. describe that during a hydrogen detonation in a reactor containment the overpressure spike would be about 23 MPa for a duration of 5 milliseconds. Kessler et al. describe a containment that includes a 2 meter thick prestressed concrete containment having a 40 mm thick steel liner that can withstand an inner static pressure of about 3 MPa (29.6 atmospheres), and a pulse pressure of 23 MPa (227 atmosphere) for a duration of 5 milliseconds. Kessler et al. do not describe nor suggest a metal containment vessel having a pressure rating of about 50 atmospheres and which has a volume less than 4 times the volume of the reactor pressure vessel that is located inside the containment vessel. Rather, Kessler et al. describe a prestressed concrete containment vessel having a metal liner that has a pressure rating of about 30 atmospheres. Also, as illustrated in Figures 2-4, Kessler et al. do not describe nor suggest a metal containment vessel that has a volume less than 4 times the volume of the reactor pressure vessel that is located inside the containment vessel.

Nakamaru et al. and Kessler et al., alone or in combination, do not describe nor suggest a metal containment vessel as recited in Claim 1 nor a nuclear reactor as recited in Claim 11. Particularly, Nakamaru et al. do not describe nor suggest that the metal containment vessel has a pressure rating of at least about 50 atmospheres (which the 12/3/03 Office Action admitted), nor that the metal containment vessel has a volume less than four times the volume of the reactor pressure vessel. Rather, Nakamaru et al. describes a dual-wall containment vessel 401, that is illustrated in Figures 2 and 10, which houses the drywell and the suppression pool (see paragraphs 0050 and 0112). The volume of containment vessel 401 shown in these figures appears to be larger than four times the volume of the reactor pressure vessel 201. The Office Action, at page 3, suggests that a ratio of the volume of the containment vessel to the volume of the pressure vessel is 3.6. Applicants disagree with this suggestion because the calculation of the containment vessel volume at page 3 of the Office Action is incorrect. Specifically, a diameter of 19.5 mm was used in the containment volume calculation. This diameter is incorrect because as explained in paragraphs [0050] and 0112, the containment vessel includes the suppression pool and as such the outer wall of the containment vessel is represented by 401b in Figure 2. Accordingly, the diameter of the containment vessel shown in Figure 2 is 50 mm, not 19.5 mm and the ratio of the volume of the containment vessel to the volume of the pressure vessel is 23.6, not 3.6.

Also, Kessler et al. do not describe nor suggest a nuclear reactor metal containment vessel that has a pressure rating of at least about 50 atmospheres, nor a containment vessel that has a volume less than four times the volume of a reactor pressure vessel that is located inside the containment vessel. Rather, Kessler et al. describe a concrete containment vessel that has a

pressure rating of about 30 atmospheres and is larger than four times the volume of the reactor pressure vessel (see Figures 2-4).

Further, Applicant submits that it would not be obvious to modify the dual cylinder containment vessel of Nakamaru et al. with the 2 meter thick prestressed concrete containment vessel of Kessler et al. because it would destroy the properties of the Nakamaru et al. invention. Nakamaru et al. describe that their structure provides a compact and economical nuclear power plant. One skilled in the art would understand that a 2 meter thick prestressed concrete containment vessel would not provide a compact nuclear reactor. For the reasons set forth above, Applicant submits that Claims 1 and 11 are patentable over Nakamaru et al. and Kessler et al., alone or in combination.

Claims 2-3 and 6-9 depend from independent Claim 1 and Claims 12-13 and 15-20 depend from independent Claim 11. When the recitations of dependent Claims 2-3 and 6-9 Claims 12-13 and 15-20 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 2-3, 6-9, and 12-13 and 15-20 likewise are patentable over Nakamaru et al. and Kessler et al., alone or in combination.

For the reasons set forth above, Applicants respectfully request that the Section 103(a) rejection of Claims 1-3, 6-9, and 11-13, and 15-20 be withdrawn.

The rejection of Claims 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Kessler et al. (Proceedings of the Fifth International Conference on Emerging Nuclear Energy Systems, Karlsruhe, 3-6 July 1989) and further in view of Kobayashi (US 4,576,784) is respectfully traversed.

At least for the reasons explained above, independent Claims 1 and 11 are patentable over Nakamaru et al. and Kessler et al.

Kobayashi describes a nuclear reactor pressure vessel that has a thickness of about 30 cm. Kobayashi does not describe nor suggest a containment vessel that encloses the reactor pressure vessel inside. Kobayashi does not describe nor suggest a containment vessel having a pressure rating of at least about 50 atmospheres, nor a nuclear reactor containment vessel that has a volume less than four times the volume of a reactor pressure vessel that is located inside the containment vessel. Particularly, Kobayashi does not describe nor suggest any containment vessel, only a reactor pressure vessel. Applicant submits that contrary to the suggestion at page 4 of the Office Action that the reactor pressure vessel of Kobayashi is a containment vessel, one skilled in the art knows that a nuclear reactor containment vessel is the vessel that houses the reactor pressure vessel. Also, Applicant submits that a reactor pressure vessel has different functions than a containment vessel and that one skilled in the art would never equate a containment vessel and a reactor pressure vessel.

Further, Nakamaru et al., Kessler et al., and Kobayashi do not describe nor suggest a containment vessel as recited in Claim 1 nor a nuclear reactor as recited in Claim 11. Particularly, for the reasons explained above, Nakamaru et al., Kessler et al., and Kobayashi do not describe nor suggest a containment vessel that has a pressure rating of at least about 50 atmospheres, nor a containment vessel that has a volume less than four times the volume of the reactor pressure vessel. Accordingly, Applicant submits that independent Claims 1 and 11 are patentable over Nakamaru et al., Kessler et al., and Kobayashi, alone or in combination.

Claim 10 depends from independent Claim 1 and Claim 21 depends from independent Claim 11. When the recitations of dependent Claims 10 and 21 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 10 and 21 likewise are patentable over Nakamaru et al., Kessler et al., and Kobayashi, alone or in combination.

For the reasons set forth above, Applicant respectfully requests that the Section 103(a) rejection of Claims 10 and 21 be withdrawn.

The rejection of Claims 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Nakamaru et al. (US 2002/0085660) in view of Kessler et al. (Proceedings of the Fifth International Conference on Emerging Nuclear Energy Systems, Karlsruhe, 3-6 July 1989) is respectfully traversed.

At least for the reasons explained above, independent Claims 1 and 11 are patentable over Nakamaru et al. and Kessler et al.

Claim 10 depends from independent Claim 1 and Claim 21 depends from independent Claim 11. When the recitations of dependent Claims 10 and 21 are considered in combination with the recitations of Claims 1 and 11 respectively, Applicant respectfully submits that Claims 10 and 21 likewise are patentable over Nakamaru et al. and Kessler et al, alone or in combination.

For the reasons set forth above, Applicant respectfully requests that the Section 103(a) rejection of Claims 10 and 21 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, reading "Michael Tersillo". The signature is fluid and cursive, with the first name "Michael" and last name "Tersillo" clearly distinguishable.

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